Public Health Advisory* for Fish and Shellfish from Tomales Bay (Marin County)

***This new state advisory replaces the Interim advisory issued in 2000**

a fact sheet by the
Office of Environmental Health Hazard Assessment
California Environmental Protection Agency

October 2004

Why has a public health advisory been issued for fish in Tomales Bay?

Samples of fish and shellfish from Tomales Bay in 1999 showed that some fish species contained high levels of mercury and could pose health risks to people who eat them frequently. As a result, the Marin County Department of Health and Human Services, Division of Health Services, in cooperation with the Office of Environmental Health Hazard Assessment (OEHHA), issued an interim advisory in December 2000. Since then, further study of Tomales Bay fish and shellfish by state agencies provided additional samples and confirmed that some types of fish have high levels of mercury. OEHHA evaluated the results from these studies and developed a revised health advisory (shown on page 4) with guidelines for limiting the consumption of fish from Tomales Bay.

The guidelines are provided to give fishers and their families information to use to protect themselves from harmful health effects that could occur from eating large amounts of fish with high levels of mercury. The guidelines can also help people select types of fish with lower levels of mercury so they can still eat fish and enjoy the benefits.

Because methylmercury affects the developing nervous system, women of childbearing age and children age 17 years and younger should carefully follow guidelines for eating these fish.

Is the new advisory different?

Yes. The new advisory is based on more samples that give a better idea of the amount of mercury in fish and shellfish from Tomales Bay. This new state advisory provides special advice for women of childbearing age and children, who are most susceptible to the effects from exposure to mercury. Less restrictive advice is provided for women beyond their childbearing years and men. Types of fish with lower levels of mercury have also been identified.

Should I stop eating all fish from Tomales Bay?

No. Fish are a nutritious part of your diet when eaten in moderate amounts. By following OEHHA's guidelines for eating fish, you can reduce your risk of health effects from exposure to methylmercury and still enjoy the benefits from fish consumption.

Why is mercury found in fish from Tomales Bay?

Mercury is a metal that occurs naturally in the environment in several forms. It is a common natural element in the California Coast Range, where it was mined as cinnabar ore largely to support gold mining operations. The Gambonini mercury mine, located about six miles upstream from Tomales Bay, was an open pit mercury mine that operated in the late 1960s and early 1970s and produced mercury for use in thermometers, dental fillings, fluorescent lights, and high-temperature military gauges. Drainage from the mine flows into Walker Creek, which flows into Tomales Bay. Studies of water quality in Walker Creek by

the state suggest that a large quantity of mercury was discharged from the mine site to downstream waters.

Other sources of mercury may contribute to contamination in Tomales Bay. These sources include coal-burning power plants, medical waste, and volcanic emissions. Mercury in the air ends up in water bodies where bacteria in the bottom sediments change it into the more toxic form known as methylmercury. Fish take in methylmercury in their food. Because methylmercury builds up in fish over time, larger fish usually have more methylmercury than smaller fish of the same species from the same water body. Predatory fish, such as sharks, generally have much more methylmercury than non-predatory fish, such as surfperch.

How does the mercury in Tomales Bay fish compare with other fish in California?

Mercury concentrations in Tomales Bay fish are similar to mercury concentrations measured in fish from San Francisco Bay, and inland lakes, rivers and reservoirs in California where fish advisories have been issued.

What are the health concerns from eating fish from Tomales Bay?

Developing fetuses and children are especially sensitive to methylmercury. Pregnant women and nursing mothers can pass methylmercury to their babies. Harmful effects can occur in the baby even without the mother experiencing any symptoms. Because methylmercury can build up in a person's body over time, it is particularly important for women of childbearing age to carefully follow the guidance provided in this advisory.

Excess exposure to methylmercury can harm the brain and nervous system in children. These changes may not be apparent, but can lead to subtle decreases in learning ability, language skills, attention, and memory. These effects may occur through adolescence as the nervous system continues to develop. For this reason, a more conservative set of guidelines is provided for women of childbearing age and children up to and including age 17.

The most subtle symptoms reported in adults were numbness and tingling sensations in the hands and feet or around the mouth. The consumption guidelines are intended to protect the most sensitive individuals in the population, including the fetus and children, from any potential harmful effects from methylmercury exposure. The levels of methylmercury found in fish from Tomales Bay should not result in the health effects described above if the proposed guidelines are followed. Following these consumption guidelines will also help prevent the buildup of mercury in the body over time.

How can families protect their health and reduce their exposure to methylmercury?

Fishers and their families who eat a lot of Tomales Bay fish can avoid excess exposure to methylmercury and reduce the risks of harmful effects by following the recommended consumption guidelines. Because the fetus and children are more susceptible to effects from methylmercury, women of childbearing age and children should follow the guidelines carefully.

Nearly all fish contain some methylmercury. All sources of fish should be considered when making choices about how much and which types of fish to eat. Most commercial fish in stores and restaurants have low levels of methylmercury. But top predatory species such as shark and swordfish contain high levels of methylmercury. The U.S. Environmental Protection Agency and U.S. Food and Drug Administration recommend that pregnant women, women who might become pregnant, nursing mothers, and young children do not eat any

shark, swordfish, tilefish, or king mackerel, and eat up to an average of 12 ounces (two average meals[1]) each week of fish (cooked) that are purchased in stores and restaurants. It is best to select from a *variety* of different kinds of fish. If two meals of fish from a store or restaurant are eaten in a given week, then fish caught by family or friends should not be eaten the same week, unless it is a type of fish such as surfperch or Pacific salmon that is low in mercury. Fishers and their families can continue to eat fish, which are a nutritious, low-fat source of protein, if they follow the guidelines and eat fish with the lowest amounts of mercury.

People who regularly fish both at Tomales Bay and at other water bodies with advisories, such as San Francisco Bay, should limit their total consumption of fish from those locations. The recommended guidelines for different species and locations should not be combined. For example, if a person eats the maximum recommended amount of halibut from Tomales Bay in a given month, the person should not eat another fish species containing mercury from Tomales Bay, San Francisco Bay, or any other source during the same month.

Methylmercury will naturally leave the body over time if exposures are reduced or stopped. For this reason, it is a good idea for women to follow the guidelines throughout their childbearing years. Also, people who have been eating fish from Tomales Bay or other places with high levels of mercury can reduce methylmercury in their bodies by choosing to eat species of fish that are lower in mercury.

What are the follow-up activities and how long will it take for mercury levels to decrease?

Significant efforts by state and federal agencies have been made to reduce runoff from the Gambonini mine into Walker Creek and subsequently Tomales Bay. There is ongoing monitoring to determine whether these efforts were successful, and whether mercury-containing sediments released before the site was cleaned up could still cause contamination.

Due to the natural prevalence of mercury in California and the deposition of mercury into waterways over a long period of time, mercury will likely stay in the environment for many years. Therefore, consumption guidance is provided to help people reduce their exposure and potential risks.

Where can I get more information?

Office of Environmental Health Hazard Assessment (OEHHA)
1515 Clay Street, 16th Floor
Oakland, California 94612
Telephone (510) 622-3170 FAX (510) 622-3218
Or visit the OEHHA Web site at: http://www.oehha.ca.gov (Click on “Fish”)

For information on mercury in commercial fish, contact:

U.S. Food and Drug Administration
Center for Food Safety and Applied Nutrition
1 (888) SAFEFOOD or http://www.cfsan.fda.gov/~dms/admehg3.html

[1] Children should eat smaller amounts.

PUBLIC HEALTH ADVISORY*FOR TOMALES BAY

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Fish are nutritious, providing a good source of protein and other nutrients, and are recommended as part of a healthy, balanced diet. As with many other kinds of food, however, it is prudent to eat fish in moderation and to make informed choices about which fish are safe to eat. OEHHA provides this consumption advice so that people can continue to eat fish without putting their health at risk.

TOMALES BAY
FISH AND SHELLFISH CONSUMPTION GUIDELINES

WOMEN OF CHILDBEARING AGE AND CHILDREN AGED 17 YEARS AND YOUNGER EAT NO MORE THAN:	
DO NOT EAT	ALL SHARKS including brown smoothhound shark, leopard shark, and Pacific angel shark
ONCE A MONTH	Bat rays ***OR***
ONCE A WEEK	California halibut; redtail, pile, or shiner surfperch; or red rock crab ***OR***
3 TIMES A WEEK	Jacksmelt
WOMEN BEYOND CHILDBEARING AGE AND MEN EAT NO MORE THAN:	
ONCE A MONTH	Brown smoothhound sharks or leopard sharks ***OR***
ONCE A WEEK	Pacific angel sharks or bat rays ***OR***
3 TIMES A WEEK	California halibut; redtail or pile surfperch; or red rock crab ***OR***
UNRESTRICTED	Jacksmelt or shiner surfperch

***MANY OTHER WATER BODIES ARE KNOWN OR SUSPECTED TO HAVE ELEVATED MERCURY LEVELS.** If guidelines are not already in place for the water body where you fish, women of childbearing age and children aged 17 and younger should eat no more than one sport fish meal per week and women beyond childbearing age and men should eat no more than three sport fish meals per week **from any location**.

EAT SMALLER FISH OF LEGAL SIZE. Fish accumulate mercury as they grow.

DO NOT COMBINE FISH CONSUMPTION ADVICE. If you eat multiple species or catch fish from other water bodies, the recommended guidelines for different species and locations should not be combined. For example, if you eat a meal of fish from the one meal per month category, you should not eat another fish species containing mercury for at least one month.

SERVE SMALLER MEALS TO CHILDREN. MEAL SIZE IS ASSUMED TO BE EIGHT OUNCES FOR A 160-POUND ADULT. If you weigh more or less than 160 pounds, add or subtract 1 oz to your meal size, respectively, for each 20-pound difference in body weight.

CONSIDER YOUR TOTAL FISH CONSUMPTION. Fish from many sources (including stores and restaurants) can contain elevated levels of mercury and other contaminants. If you eat fish with lower contaminant levels (including commercial fish) you can safely eat more fish. The American Heart Association recommends that healthy adults eat at least two servings of fish per week. Shrimp, king crab, scallops, farmed catfish, wild salmon, oysters, tilapia, flounder, and sole generally contain some of the lowest levels of mercury.

This advisory does NOT apply to commercial oysters, clams, and mussels from Tomales Bay; elevated levels of mercury have not been found in commercially grown shellfish.

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